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AUTHOR Tama, M. Carrol; Martinez, David H.
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ABSTRACT

Designed to explore what is being done to help learning disabled (LD) readers develop comprehension skills, this paper reviews research in teaching reading comprehension to LD students and develops generalizations from the research to guide reading comprehension instruction for such students. The 10 generalizations presented and discussed in the paper are as follows: (1) there are differences in reading comprehension between LD students and nonlearning students, (2) readiness strategies improve reading comprehension, (3) teacher directed instruction during reading increases comprehension, (4) LD readers may be taught self-monitoring during reading to improve comprehension, (5) little research has investigated the effects of providing instruction to LD readers after reading, (6) limited attention is given to inference training in the LD research, (7) limited attention is given to the interactive effects of reading comprehension strategies, (8) LD students may succeed as well as other students on ability level and grade level materials with teacher guidance, (9) evidence supports the existence of a minimal reading level for LD students to benefit from instruction, and (10) operant techniques may be used to improve reading comprehension of LD students. An extensive chart presents generalizations from five years of research. (FL)

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M. CARROL TAMA, PH.D.
PORTLAND STATE UNIVERSITY

DAVID H. MARTINEZ, D.ED.
PORTLAND STATE UNIVERSITY

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Reading Comprehension and the Learning Disabled Reader: Generalizations from Five Years of Research (1980-1985)

Running head: LEARNING DISABLED READERS

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Reading Comprehension and the Learning Disabled Reader: Generalizations from Five Years of Research (1980-1985)

A growing concern among educators today is instruction for the learning disabled student. As mainstreaming grows, classroom teachers need comprehension strategies to help convey their content area information and ideas to both the average and the LD learner.

Specifically, what is being done to help the LD student? The purpose of this paper is to investigate what helps the LD learner comprehend. Our intent is to (1) describe the research in teaching reading comprehension to the learning disabled student and (2) to develop generalizations from this research to guide reading comprehension instruction for the LD student and to suggest further research which would increase the LD student's ability to understand, recall or integrate information from text.

The research reviewed for this paper defines the LD learner in terms of reading comprehension deficits. Although the Federal Register's description of the learning disabled (1977) includes a number of deficit areas, we elected to limit the review of the research to the areas which seemed to provide the most direction for instructional practice in the classroom. We share Lipson and Wixson's view (1986) that research which is directed toward the "specification of the conditions under which different readers can and will learn" has the most to offer educators today.

In addition, in this review we limited our selection to those studies which defined reading comprehension similarly to that described in Becoming a Nation of Readers, The Report of the Commission on Reading (1985) "as a process in which information from the text and the knowledge possessed by the reader act together to produce meaning."

In order to make sense of the myriad studies related to the LD student and reading comprehension, we distinguished studies between activities or strategies based upon when the intervention promoting reading comprehension took place. We used Tierney & Cunningham's model (1984) based on their trichotomy: activities which occur before, during or after reading text information. Reading comprehension strategies in the first group include those which activate students' existing background knowledge and attention before they read the material. In the second group, students are guided while they read text material, and finally after students have read the material, interventions are used which help the student review, question or synthesize the material.

The following generalizations emerged from our review of the literature..

Generalization #1: There are Differences Between Learning Disabled Students and Non-Learning Disabled Students in Reading Comprehension

When comparing the learning disabled with the non-handicapped, two characteristic differences are identified relative to text interaction and response to comprehension instruction.

The LD readers typically read slower and vary their speed less according to changing purposes of reading than do non-LD's (Dowdy et al. 1982). As the LD student advances in school, these characteristics become more pronounced. In addition, the LD students are less able to distinguish organized text from disorganized passages, whereas normal achieving students readily detected expository text inconsistencies (Wong & Wilson, 1984; Bos & Filip, 1984). In yet another study, Fayne (1981) found that the normal achieving students were better able to detect pronoun antecedent relationships than were LD students. These studies suggest that learning disabled students differ from normal achieving students in their interaction with text material.

Learning disabled students, when compared to normal achieving students, differ their response to reading instruction designed to enhance comprehension. In Pany et al.'s, (1982) study investigating the effects of vocabulary instruction, the learning disabled students required more direct instruction. Unlike the average reader, they

did not benefit from the context treatment and only minimally from the meanings given treatment. Pflaum et al. (1982) investigated the effectiveness of four comprehension facilitating conditions. The LD students benefited most from the word and sentence conditions. Normal readers benefited equally from all conditions.

The research over the past five years has evolved from that which merely defines differences between the non-LD students and the LD students to that which examines the effect of intervention strategies which help or hinder the LD in comprehending. Knowing the specific characteristics of the LD learner helps the teacher adjust instruction. Knowing what interventions to use, however, helps the teacher plan, implement and assess this instruction.

Generalization #2: Readiness Strategies Improve Reading Comprehension

Readiness strategies are designed to build background knowledge and help focus attention on the reading text (Tierney & Cunningham, 1984). Idol-Maestas (1985) studied the effect of an advanced organizer with LD students. After training, reading comprehension improved for elementary and secondary LD students.

Sinatra et al. (1985) compared a basal method of teaching reading comprehension with semantic mapping. The semantic mapping procedure produced higher comprehension scores. Pflaum et al. (1982) found that purpose setting and prior knowledge aids were not as useful in promoting reading comprehension as were word identification and

sentence aids with LD students. Sachs (1984) compared a plans and goals activity with a conceptual overview approach. The plans and goals activity where students made predictions and comparisons was found to be more effective in promoting comprehension.

Schumaker et al. (1982) reported improved reading comprehension on end of chapter tests for expository materials in science, social studies and U.S. history for LD students using a procedure, Multipass. Students were taught to employ strategies which require them to pass through the chapter for a particular purpose. Another researcher, Lindsey (1983), found that reading comprehension is enhanced when learning goals and comprehension outcomes are imbedded in text materials.

These studies suggest that previewing reading materials through readiness strategies improves reading comprehension. Why some intervention strategies are more effective than others still is not clear. Some trends appear to emerge from this literature, however. When students are actively involved in the anticipatory strategy more comprehension appears to occur. When the strategy is structured stepwise and an effort is made to reinforce the process before the student is expected to use it independently, more comprehension and transfer occurs. Finally, when materials are selected which clearly state and explain the ideas and concepts the teacher wishes to teach, the LD student is more likely to comprehend.

Generalization #3: Teacher Directed Instruction During Reading Increases Comprehension

The studies are varied but demonstrate that comprehension gains emerge after teacher directed instruction. The direction of this research appears to be moving from remedial type interventions more appropriate for the resource room to classroom strategies which the typical teacher can incorporate.

Remedial type interventions are reflected in such studies as those conducted by Bos, 1982; White et al., 1981; and Cartelli, 1980. Remedial strategies such as repeated reading and the neurological impress method were examined. A significant comprehension and word recognition gain after these interventions occurred. Other researchers have hypothesized that LD students have language problems which impede their comprehension. White (1981) and Cartelli's (1980) research suggests that language training may be more successful for the student with some language skills. They also found that language training effects may be more significant over the long term than the short term.

Helping the LD learner comprehend in the content area is a recent area of investigation. Lovitt et al. (1985) adapted science materials for the teachers to use along with their class lectures. Two experimental approaches were used with students. In this comparative study, the gain scores of the experimental students

tended to be higher than those of the control pupils (receiving no training in these intervention procedures). The authors found that the use of an intervention strategy was significant, not the particular kind of strategy.

In sum, the research suggests that intervention strategies are helpful in increasing comprehension. While the use of frameworks and vocabulary strategies are supported by existing research, a number of questions remain. From the Lovitt et al. (1985) study, for instance, it is not clear why there was no difference between the interventions used. In addition, one wonders whether these methods would be as successful across the curriculum?

Generalization #4: LD Reading May Be Taught Self-Monitoring During Reading to Improve Comprehension

A promising area of research that is emerging in the LD literature involves intervention strategies that encourage LD students to be active participants in their own learning. When students are encouraged to actively comprehend, to generate images, to give descriptions, to raise questions and to develop summaries, they appear to be more successful in understanding their lessons.

Imagery studies are numerous (Carnine et al., 1985; Clark et al., 1984; & Rose et al., 1983). Carnine and Kinder (1985) used two experimental activities, one an imagery exercise, the other a schema based intervention. Following training, scores were statistically significant. No significant difference was found between the interventions.

Clark et al. (1984) contrasted a visual imagery strategy with a self-questioning intervention. The students' use of the strategies resulted in greater comprehension scores from the pretest in baseline to the posttest after training. In addition, students were able to transfer the skill from ability-level materials to grade-level materials. Again both interventions were as effective. Rose et al. (1983) assigned students to verbal rehearsal, visual imagery and "unaided" instruction groups. These researchers found that visual imagery and verbal rehearsal both significantly increased comprehension. However, in a follow-up interview, the students preferred the verbal rehearsal strategy to the imagery intervention.

Next to imagery research, self-questioning studies seem to emerge as the second area of concentrated focus (Carnine et al., 1985; Clark et al., 1984; Wong et al., 1982). The studies by Carnine (1985) and Clark (1984) have been previously discussed.

Wong and Jones (1982) assigned students to two groups, one group received no training, the other group received self-questioning training. The authors found that training increased the LD adolescents' awareness of important textual units as well as their ability to formulate good questions involving those units. Moreover, their comprehension performance improved. For the LD students, the authors conclude that self-questioning is a constructive strategy in gaining meaning from text.

The LD research on imaging appears to confirm what a number of other researchers have found that careful directions and/or training to image can improve prose learning of students. However, how efficient will content area teachers find these strategies? Will they employ strategies that involve so much planning and monitoring? The research needs to be conducted with larger populations and across disciplines. Young students appear to prefer other strategies rather than imaging. Care needs to be taken to determine under what conditions these interventions may be feasible and for which students.

In the self-questioning research, students were given practice time with self-questioning strategies in contrast to what Tierney and Cunningham (1984) found in their review. In our review, we found that the instructions which were given to students severely limited the types of questions students would ask.

Generalization #5: Little Research Effort is Directed to Investigate Effects of Providing Instruction to LD Readers After Reading.

Postreading activities which provide for retention, reinforcement, extension and application of facts and ideas previously read are sparsely represented in the LD research at this time. Postquestioning, drills and discussion are typically used by teachers to review, reteach or supplement students' comprehension of the content covered.

A study which documents the efficacy of a strategy used after the students have completed reading was done by Jenkins et al. (1983). These researchers looked at the efficacy of two word error correction interventions to determine their effects on measures of word recognition and comprehension. The drill correction exercise produced significant effects on word recognition post measures and higher comprehension scores.

In order to strengthen LD students' skills in learning from disorganized text, Wong and Wilson (1984) taught the LD students a five-step procedure in reorganizing this information. Their results indicated that students could learn how to reorganize information for better recall.

In both these studies, the findings demonstrate that LD students can learn from their reading if given strategies to work with that text after reading it. However, much more needs to be done in this area before we can begin to understand the impact of postreading activities on the LD student.

Generalization #6: Limited Attention Is Given to Inference Training in the Research of the LD Student

In light of the current interest in inferential comprehension for normal achieving students, one is struck by the lack of it regarding the LD student. Yet mainstreamed LD learners are expected to infer as readily as their more skilled counterparts.

Idol-Maestas (1985) developed a strategy to help elementary and secondary students improve their comprehension. After the students were trained, the author examined responses to different types and categories of questions. Regardless of type or category, responses were most likely to improve as a result of using probing techniques. In addition, performance was also more likely to deteriorate as a result of removing the teacher-guided procedure. However, secondary students maintained improved inferential comprehension when they were no longer guided in using the technique.

Like many of the studies addressed in this paper, the Idol-Maestas study confirms that when the LD students are taught to actively participate in the learning process, they are more successful. Traditionally, reading research supports the worth of strategy training to promote inferential thinking for younger readers and less skilled older readers (Hansen & Pearson, 1985). Research on inferential comprehension among LD students is much needed and will provide a potential source of rich data both for the researcher and the practicing educator.

Generalization #7: Limited Attention is Given to the Interactive Effects of Reading Comprehension Strategies

Research which addresses text characteristics which influence comprehension is in its infancy (Tierney & Cunningham, 1984). Although students read both narrative and expository material throughout the course of the school day, much of the research centers on one kind of text organization, narrative or expository rather than both.

Carnine and Kinder (1985) looked at the effects of two intervention strategies on expository as well as narrative material. The schema group's scores were higher than the generative learning group's on the expository transfer maintenance test. Carnine and Kinder suggest that schema based interventions may be better suited for natural and physical science, economics and other content areas where specific principles are more readily apparent. Moreover, they suggest that the generative learning intervention may work better for content areas like history where rules and applications are not so clear cut.

We would suggest that this difference in content be examined to determine which subject areas are best suited for these interventions. Studies should be continued which increase the LD students' awareness of different kinds of prose, and help them to monitor their comprehension of these materials.

Generalization #8: LD Students May Succeed Equally as Well on Ability Level and Grade Level Materials with Teacher Guidance

A concern of many teachers of the mainstreamed LD student is whether these students can use grade level materials or not. Clark et al. (1984) demonstrated with their study that LD students can learn strategies like visual imagery and self-questioning and apply these strategies to ability level materials and transfer these skills to grade level material. Schumaker et al. (1982) conducted a study using a procedure designed to teach students a complex learning

strategy to enable them to gain information from textbook chapters. Initially, the students learned the strategies on ability level materials; they then practiced on grade level textbooks.

In this study, most students mastered the strategy in ability level materials and were able to use the strategy in grade level materials without further training or practice. The single exception involved a student trained in low ability level materials, then transferring to a very advanced grade level materials. All the students' grades in content tests improved from baseline to posttraining.

One of the instructional principles that Tierney and Cunningham cite (1984) appear to have some bearing on the previous findings. The Preceding studies seem to support the principle "Teachers should have students read easy materials and perform comprehension tasks they can complete with high success" (Cunningham, 1985).

Generalization #9: Evidence Supports Minimal Reading Level for LD Students to Benefit From Instruction

Instructional strategies designed to improve reading comprehension appear to be more beneficial when students achieve at a minimum reading grade level.

A second grade reading level was found to be necessary for using such intervention strategies as verbal rehearsal, visual imagery, advanced organizers and the use of context to maintain meaning while reading orally (Rose et al., 1980; Idol-Maestas 1985, & Pflaum et al., 1980).

A reading level of fourth grade was found to be a prerequisite for the effectiveness of self-questioning on the reading comprehension of secondary LD students in Clark et al.'s (1984) study. These authors also suggested a fourth grade reading level for visual imagery training. Schumaker et al. (1982) and Idol-Maestas (1985) reports that secondary students need at least a third grade reading level to profit from instruction using their intervention strategies.

With minimal reading levels both elementary and secondary students can make the transition from ability level to grade level materials provided they are given direction by the teacher.

Generalization #10: Operant Techniques May be Used to Improve Reading Comprehension of LD Students

A review of the literature since 1980 regarding the use of operant conditioning techniques to improve reading comprehension reveals a dearth of relevant research studies. This finding suggests that the focus has shifted from the behavioristic model, prevalent in special education during the late sixties and seventies. However, a few research studies were identified that support the use of operant procedures to improve reading comprehension.

Swanson (1981) investigated the effects of contingent free time and self-recording on the reading comprehension of LD students. Both of these activities substantially improved reading comprehension. In a similar study, Galbreath (1983) found that reading comprehension improved with a contingently administered token reinforcement system.

These studies suggest that operant techniques through the use of free time and points improves reading comprehension.

Conclusion

In our review of the research we have noted a shift from investigations of behavioristic, remedial type strategies for the LD learner to those which are functional and practical for the teacher and the LD learner in the mainstreamed classroom. Educators have identified the learning disabled reader as a passive learner, a learner who does not spontaneously become involved in the learning process. A number of studies we have reviewed show that these passive learners actively participate when shown how to do so and benefit educationally from this participation. Regardless of the student's reading level or disability level, much of this research demonstrates that if students are given the requisite skills they need their reading comprehension is enhanced. Finally, if students are given the opportunity to practice in ability level materials and then shift to grade level materials, they are particularly successsful in reading with understanding.

We suggest that the research on the LD student and comprehension should continue. As noted in several of our generalizations much more research needs to be done in order to understand how the LD students learn from their texts, instructional tasks and specific

content area settings. We hope that the strategies that are examined will continue the trend of focusing on the LD student in the real world of the classroom. These strategies should take into consideration the restraints of time and resources that challenge the classroom teacher. Finally, we hope these strategies won't impede students' understanding and enjoyment of their content.

See our summary of critical variables included in these studies (Figure 1) for specific information related to this review of the literature.

Figure 1.

Reading Comprehension and the Learning Disabled:
Generalizations from Five Years of Research (1980-1985)

STUDIES	N LD/NLD	AGE	GRADE	MATERIALS	TREATMENTS PRE	DURING	POST	TREATMENT	TREATMENT TIME	MEASURES	INSTRUCTION I/G
Bos. et al. (1982)	1		5	NAR		X		Assisted repeated readings	5 weeks	Standardized tests	I
Bos. et al. (1984)	20 20		7	EXP		X		Detecting text inconsistency	Not Reported	Teacher made questions retell	I
Carnine et al. (1985)	27		4-6	NAR/EXP		X		Generative Schema	19 days	Comprehension tests/oral retell	G
Cartelli (1980)	46	8		EXP		X		Word/sentence relationships	19 days	Standardized tests	G
Clark et al. (1984)	6		6.9	NAR/EXP		X		Visual imagery self-questioning	5-7 hours	Teacher made comprehension tests	I
Dowdy et al. (1982)	60 60		4.7	NAR	X			Vary reading rate according to purpose	Not Reported	Elapsed time comprehension questionnaire	I (Computer)
Dyck et al. (1981)	14	14	8-9	EXP		X		Underlining	6 days	Commercially made comprehension questions	G
Fayne (1981)	25 50	16	10-11	EXP		X		Identify pronoun referents	1 day	Multiple choice test	G
Fleisher et al (1983)	21		4-5	NAR		X		Oral reading; errors corrected: not corrected emphasize comprehension	18 days	Teacher made comprehension questions	I
Galbreath, et al. (1983)	1	10		EXP			X	Token reinforcement (points)	10 days	Questions answered	I
Idol-Maestas (1985)	4	8.9 12	4-6	NAR		X		Advanced organizer Tells Fact/ Fiction	16-37 days	Teacher made questions - GORT Listening comprehension	I
Jenkins et al. (1983)	17		3-7	EXP			X	Word supply Drill procedure	4 days for each of 2 strategies	Close tests teacher made comprehension questions	I

STUDIES	N LD/NLD	AGE	GRADE	MATERIALS	TREATMENTS PRE	DURING	POST	TREATMENT	TREATMENT TIME	MEASURES	INSTRUCTION I/G
Lindsey (1983)	24	13		EXP	X			Learning goals text organization	1 day	Multiple choice test	G
Lovitt et al. (1983)	20 104		7	EXP		X		Precision teaching study guides	10 days for each of 2 treatment strategies	Multiple Choic Post Test Write - Facts Test	G
Pany et al. (1982)	6 22		4.6	TESTS	X			Meanings from context meanings given meanings practiced	3 days	Isolated vocbulary test Multiple choice vocab. test Anaaolry teste	I
Pflaum et al. (1980)	40	10		NAR		X		Self-correction	12 weeks (2 days per week)	IRI	G
Pflaum et al. (1982)	26 73		2-4	NAR	X			Word ident/ meaning sentence aids purpose/ setting prior knowledge	Not Reported	Retelling	I
Rose (1983)	30	9		NAR		X		Visual imagery Verbal Rehearsal	1-5 days	Teacher made comohrension questions	G
Sachs (1984)	24		8-9	NAR	X			Prior knowledge plans/goals Concentural overview	Not Reported	Teacher made test	I
Schumaker et al. (1982)	8	14-16		EXP	X			Multipass	4 1/2 - 11 1/2 hours	Chapter test	I
Sinatra (1985)	3	8-10		EXP	X			Semantic mapping	5 weeks (once weekly)	Teacher made test	G
Swanson (1981)	13		3-4	NAR/EXP			X	Self-recording tokens free time	9-18 days	Questions answered	I
White et al. (1981)	30	11		NAR/EXP		X		Sentence Construction Sentence Study	8 weeks (3 days per week)	Cloze tests Sentence construction	G

STUDIES	N LD/NLD	AGE	GRADE	MATERIALS	TREATMENTS PRE	TREATMENTS DURING	TREATMENTS POST	TREATMENT	TREATMENT TIME	MEASURES	INSTRUCTION I/G
Wong et al. (1980)	60 60		8-9	EXP		X		Self-questioning	2 days	Passage test Passage recall	G
Wong et al. (1984)	28 28		5-7	EXP		X		Organized, disorganized, passages	Not Reported	Detecting passage dif. Group sentences, recall	I

References

Barr, R. (1982) Classroom reading instruction from a sociological perspective, Journal of Reading Behavior, 14, 375-389.

Bos, C.S. (1982) Getting past decoding: assisted and repeated readings as remedial methods for learning disabled students. Topics in Learning and Learning Disabilities, 1, 51-57.

Bos, C.S., & Filip, D. (1984) Comprehension monitoring in learning disabled and average students. Journal of Learning Disabilities, 17, 229-233.

Carnine, D., & Kinder, D. (1985) Teaching low performing students to apply generative and schema strategies to narrative and expository materials. Remedial and Special Education, 6, 20-30.

Cartelli, L.M. (1980) Reading comprehension: a matter of referents. Academic Therapy, 15, 421-430.

Clark, F.L., Deshler, D.D., Schumaker, J.B., Alley, G.R., & Warner, M.W. (1984) Visualimagery and self questioning: strategies to improve comprehension of written material. Journal of Learning Disabilities, 17, 145-149.

Cunningham, J.W. (1985) A research base for improving reading comprehension. In R. Anderson, J. Osborn, & P. Wilson (Ed.), Research foundation for a literate America, Lexington, Mass.: Heath.

Dowdy, C.A., Crump, W.D., & Welch, M.W. (1982) Reading flexibility of learning disabled and normal students at three grade levels. Learning Disability Quarterly, 5, 253-263.

Dyck, N.J., & Cox, L. (1981) Should learning disabled students underline their texts? Academic Therapy, 17, 83-87.

Fayne, H.R. (1981) A comparison of learning disabled adolescents with normal learners on an anaphoric pronominal reference task. Journal of Learning Disability, 14, 597--599.

Fleisher, L.S., & Jenkins J. (1983) The effect of word and comprehension emphasis instruction on reading performance. Learning Disability Quarterly, 6, 146-154.

Galbreath, J., & Feldman, D. (1983) The Effect of a Token Reinforcement Program on the Reading Comprehension of a Learning Disabled Student. Paper presented at the annual meeting of the Association for Children and Adults with Learning Disabilities, Washington, D.C. (ERIC Reproduction Service No. ED229929).

Idol-Maestas, L. (1985) Getting ready to read: guided probing for poor comprehenders. Learning Disability Quarterly, 8, 243-254.

Jenkins, J.R., Larson, K., Fleisher, L. (1983) Effects of error correction on word recognition and reading comprehension. Learning Disability Quarterly, 6, 139-145.

Lindsey, J.D. (1983) Effects of learning goal attainability level text organization and age level on learning disabled adolescents' silent reading comprehension. Education and Treatment of Children, 6, 165-173.

Lipson, M. & Wixon, K. (1986) Reading research: An interaitionist perspective, Review of Educational Research, 56, 111-136.

Lovitt, T., Rudsit, J.,Jenkins, J.,Pious, C., Benedetti, D. (1985) Two methods of adapting science materials for learning disabled and regular seventh graders. Learning Disability Quarterly, 8, 275-285.

Pany, D., Jenkins, J.R., & Schreck, J. (1982) Vocabulary instruction: effects on word knowledge and reading comprehension. Learning Disability Quarterly, 16, 202-215.

Pflaum, S.W., Pascarella, E.T. (1980) Interactive effects of prior reading achievement and training in context of learning disabled children. Reading Research Quarterly, 16, 135-158.

Pflaum, S.W., Pascarella, E.T., Auer, C., Augustyn, L., Boswick, M. (1982) Differential effects of four comprehension facilitating conditions on L.D. and normal elementary school readers. Learning Disability Quarterly, 5, 106-116.

Rose, M.C., Cundick, B.P., & Higbee K.L. (1983) Verbal rehearsal and visual imagery: mnemonic aids for learning disabled children. Journal of Learning Disabilities, 16, 352-354.

Sachs, A. (1984) Accessing scripts before reading the story. Learning Disability Quarterly, 7, 226-228.

Schumaker, J.B., Deshler, D.D., Alley, G.R., Warner, M.M., Denton, P.H. (1982) Multipass: a learning strategy for improving reading comprehension. Learning Disability Quarterly, 5, 295-304.

Sinatara, R.C., Berg, D., & Dunn, R. (1985) Semantic mapping improves reading comprehension of learning disabled students. Teaching Exceptional Children, 17, 310-314.

Swanson, L. (1981) Modification of comprehension deficits in learning disabled children. Learning Disability Quarterly, 4, 189-202.

Tierney, R. & Cunningham, J. (1984) Research on teaching reading comprehension. In P.D. Pearson (Ed.). Handbook of Reading Research, New York: Longman.

White, C.V., Pascarella, E.T., & Pflaum, S.W. (1981) Effects of training in sentence construction on the comprehension of learning disabled children. Journal of Educational Psychology, 73, 697-704.

Wong, B.Y.L., & Jones, W. (1982) Increasing metacomprehension in learning disabled and normally achieving students through self questioning training. Learning Disability Quarterly, 5, 228-240.

Wong, B.Y.L. & Wilson, M. (1984) Investigating awareness of and teaching passage organization in learning disabled children. Journal of Learning Disabilities, 17, 477-482.